

Remarks/Arguments

Claim 1 remains in the application and has been amended

Re-examination and reconsideration are requested.

Claim 1 has been amended to correctly refer to said one or more switches to overcome the 35 USC § 112 rejection and more particularly point out and distinctly claim the subject matter which applicants regard as the invention.

In the Office Action mailed May 12, 2004, claim 1 of the present application was rejected under 35 USC § 103(a) as being unpatentable over Filion, et al (United States Patent No. 5,952,630) in view of Filion, et al. (United States Patent No. 5,448,028) and in further view of Spanjer (United States Patent No. 4,654,290).

The Examiner submitted on page 4 of the Office Action that "it would have been obvious for one of ordinary skill to have provided a colored outer skin and have used a laser marking method as taught by Spanjer ('290) as an alternative to the printing process of Filion, et al., ('028) to form indicia in the process of Filion, et al. ('630) because, Filion ('630) teaches marking of said outer skin layer and Spanjer ('290) teaches that laser marking and printing are equivalent alternatives and also because, laser marking provides a clearer and more durable marking, while eliminating the extra processing step in the printing process of applying a clear coat over a printed mark.

The present application as amended herein is directed at a method of marking a

polymer **skin layer** of thermoplastic or thermoset material for a **vehicle interior panel** with a laser to indicate the position or function of a switch. The switch is embedded in a polyurethane foam layer of the panel beneath the skin. An area of the skin that overlies one or more switches has a laser beam projected on to its surface and the surface contacted by a laser beam changes color relative to an area not contacted by the laser beam, **creating a marking in the outer surface of the skin which may be used to indicate the position or function of an underlying switch or switch array.** See e.g., claim 1.

Filion '630 is directed at a vehicle interior trim panel electrical switch assembly comprising a plurality of low-profile force sensitive variable resistance resistor sensors embedded in a foam layer of a door armrest. Filion ('630) discloses that **indicia may be printed** on the continuous outer surface, or the flexible skin may comprise a raised area in overlying relationship to the sensors. (See column 6, lines 8-10 of '630). Filion, et al. ('028) is directed at a pressure activated modular switch positioned between a substrate and a flexible outer skin in a vehicle soft interior trim panel and a depressed or raised area in the flexible skin adjacent to the outer portion of the switch. The independent claims are directed at indicia **printed** on the outside face surface of the flexible skin for indicating location of the switch. Column 3, lines 38-40 and column 5, lines 8-43 of '028 disclose **printing indicia on the outer surface of a flexible skin.**

That much being the case, Filion '630 and/or Filion '028 do **not** teach or suggest anything regarding the advantages, desirability, convenience or even hint at the opportunity to

successfully project a laser beam to an outer skin surface in an area that overlies a switch (embedded in foam). It is therefore believed and respectfully submitted that one of ordinary skill in the art, considering Filion, would not think that given that Filion discloses printing, one could abandon such direction afforded by this reference, and do away with a step of printing, in favor of the use of a laser, as recited in the claims herein.

On that note, it is not at all clear to Applicants that the combination as suggested by the Examiner, that one of ordinary skill in the art would look beyond Filion to do something other than print, has been properly established. Or, stated another way, since Filion does not suggest anything regarding printing in any manner other than simple and basic "printing", the suggestion that one skilled in the art would replace Filion's printing with a completely different approach and method (laser scoring of the surface) remains unclear to Applicants.

Applicants concur with the Examiner recognition that obviousness can only be established by combining or modifying the teachings of the prior art under those circumstances where there is some teaching, suggestion or motivation to do so, found either in the reference themselves or in the knowledge generally available to one of ordinary skill in the art. Applicant would add to this statement of the law that although a prior art device may be capable of being modified, there must be a suggestion or motivation in the reference to do so. See, In re Mills, 916 F.2d 680 (Fed. Cir. 1990). In addition, with respect to the use of knowledge generally available to one of ordinary skill in the art, the Board of Patent Appeals

& Interferences has itself more recently made clear that the mere fact that the prior art may be modified in a manner suggested by an Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. Ex parte Yoshida & Furusawa, Appeal No. 2003-1605, Board of Patent Appeals & Interferences, Heard March 18, 2004. See also, In re Zurko, 258 F. 3d 1379 (Fed. Cir. 2001)(court required evidence for the determination of unpatentability by clarifying that the principles of “common knowledge” and “common sense” may only be applied to the analysis of the evidence, rather than be a substitute for the evidence.)

With the above in mind, the Examiner suggests that the deficiencies of Fillion can be addressed by turning to Spanjer. The Examiner argues that the combination is proper since “Spanjer (‘290) teaches laser marking an object as a replacement for printing, hence teaching laser marking as an equivalent alternative to printing (see col. 1, lines 24-25).

Applicant has carefully examined column 1, lines 24-25 of Spanjer, in context, and note that this section of Spanjer reads as follows, with appropriate emphasis:

It is commonplace in the electronic art to place alpha-numeric codes upon electronic devices for identification purposes. Historically this has been accomplished by using printing with type and ink. Means for carrying out such printing to mark devices are well-known in the art.

Recently, laser marking has been used as a replacement for printing. With laser marking, a very intense beam of light is scanned over the device surface to write out the desired markings or is projected onto the device surface through a shadow mask containing an image of the desired markings. The intense light from the laser burns, melts, ablates, or otherwise alters the surface of the device to leave a visible imprint.

Therefore, Applicant respectfully submits that Spanjer should not be relied upon for anything more than a teaching that one can use laser marking on an electronic device. The question then becomes, what are the electronic devices of Spanjer, and do they at all suggest laser marking on a skin for a vehicle interior trim panel to indicate the position of function of a switch in the manner recited in claim 1. Applicant respectfully submits that the answer to this question is "no." The electronic devices of Spanjer are epoxies, silicones and polyimides along with high levels of filler material. Therefore, Applicant maintains the view the Spanjer can not serve as a generic teaching that laser marking of **any substrate** would be an equivalent alternative to printing on any substrate, and is not properly combinable with Filion who simply teaches that one can print on substrates that-oddly enough-differ from those disclosed by Spanjer.

In any event, turning then to other portions of Spanjer (United States Patent No. 4,654,290), this reference is, as noted, directed at an improved laser markable **material** for **encapsulation of electronic devices** by adding **TiO₂ or TiO₂+ Cr₂O₃** to common plastic **encapsulants** formed from a mixture of resin + **filler** + carbon black + mold release agent.

Accordingly, Spanjer ('290) is quite limited in his teachings and thus should not be construed to broadly apply to all plastics of all colors in all possible applications, much less a method of marking a skin for a vehicle interior trim panel to indicate the function of a switch by providing a skin layer formed by casting, spray coating, blow molding or thermoforming thermoplastic or thermoset materials having a color, providing a substrate layer, providing a polyurethane foam layer bonded directly to said substrate layer and to said colored skin,

providing one or more switches embedded in said foam layer and underlying said colored skin layer, activating a laser and projecting the laser beam onto said outer skin in an area that overlies said one or more switches such that a portion of the skin surface contacted by said laser beam changes color relative to a portion of the outer skin surface not contacted by said laser to create a marking to indicate the position or function of the one or more switches. See pending claim 1.

Spanjer is clearly directed at making electronic devices, and not skins that cover a cushioning foam layer in a vehicle. Since Spanjer is directed at encapsulation of electronic devices, the polymers and processes used are understandably limited. “**Epoxies, silicones and polyimides** are suitable resins.” (See column 3, lines 58-59 of “290). As further noted in Column 3, lines 44-48, “[b]ody 17 of electronic device 18 is commonly of plastic and is typically formed by encapsulating a lead frame (not shown) by **transfer molding, injection molding or potting in a mold.**” These processes are not used nor claimed by the Applicant to form skins for marking by a laser. See again, claim 1.

Further, Spanjer discloses that a **filler loaded resin** is required (see column 3 line 55 to column 4 line 16) as well as a release agent, specifically **Carnuba wax**.

Thus, a grey colored molding having what appears to be no utility for use as a skin layer in a vehicle trim is assured (due to the high filler level, 65-67%, see column 5 lines 1-3) and there is no suggestion that plastic skins of any color may be so marked where such skins

are formed by casting, spray coating, blow molding or thermoforming (see claim 1).

More specifically, Spanjer's ('290) invention is directed at turning a grey colored potting compound gold! (See column 5 lines 37-53). The polymer used will be grey due to the high level of filler used (preferably quartz) and the presence of TiO_2 . Applicants' invention is not so limited in such a unitary choice of colors of the skin, nor a color change only to gold. If one were to rely on Spanjer, one would think that if one selected a polymer skin, which was gold, a laser marking would not be visible. In the present invention, Applicant has recognized that, in fact, you can start with a gold polymer skin, and laser mark. Applicant considers this on its own to clearly be a non-obvious step of the combination of Fillion and Spanjer, and if the Examiner considers otherwise, Applicant would certainly appreciate how that might be the case. That is, if Spanjer is limited to turning different materials only gray to gold, how does that render obvious the invention that one can laser mark, without such restriction, a skin for a vehicle interior trim panel to indicate the position or function of a switch?

In sum, Fillion ('630, '028) teaches printing on a flexible skin surface, not laser marking thereof. Spanjer ('290) is entirely and comprehensively directed at laser marking electronic devices formed of epoxy, silicone and polyimide resin, formed by injection molding, transfer molding or potting wherein a high level of filler must be present which yields a grayish hue which upon addition of TiO_2 or $\text{TiO}_2 + \text{Cr}_2\text{O}_3$ in the presence of Carnuba wax. Spanjer informs the art that with such materials, and exposure to a laser, the gray turns

gold.

In contrast, Applicant exposes a portion of a polymer skin formed by casting, spray coating, blow molding or thermoforming thermoplastic or thermoset materials to a laser to create a marking, not limited to or related to Spanjer ('290) in any fashion. If Applicant were to attempt to use Spanjer's disclosed invention, it is submitted that one would likely not mark certain colors of a skin (as the gold color in many cases would not be contrasting enough to be seen) and the levels of filler required would likely reduce the applicability of the skin for a vehicle trim panel to an unacceptable level, say nothing of the presence of Carnuba wax which would be incompatible and disrupt the outer surface of the skin, making it unacceptable in appearance for use as a vehicle interior trim panel.

Furthermore, in the present application, the material which contacts the electrical device (switch), and which amounts to polyurethane foam, is not itself marked nor need it contain 1 %-5% TiO_2 . Rather, a polymer skin layer (cast, sprayed, blowmolded or thermoformed) overlies the encapsulating or coating media (urethane foam) and the skin layer surface may be marked by the application of a laser beam. Again, this is contrary to all of the references cited, either alone or in combination, which never suggest that one can mark a vehicle interior trim panel to indicate the position or function of a switch, where there is a foam layer bonded to the skin. In that sense, Applicant respectfully submits that one of ordinary skill in the art had no guidance or suggestion in the art of record that one could reliably mark, in the presence of a foam layer bonded directly to a substrate layer with

switches in the foam layer, and laser marking, where the laser would not have any negative effect on ensuing switch functionality.

Finally, the Examiner on page 6 of the Office Action mailed May 12, 2004 comments that "Spanjer ('290), teaches that a polymeric material that includes a pigment die changes color upon interaction between said pigment die and a laser beam and forms a marking of a different color than the surrounding material (see col. 1 lines 52-60)." However, it is again noted in context that although Spanjer discloses that Hysol-Blue molding compound can be exposed to laser, Spanjer ultimately discourages the use of such product and states "the contrast is less than desired" (see '290, column 4 lines 45-51).

In addition, the Examiner, on page 7 of the Office Action mailed May 12, 2004, comments "that the polymeric material of Spanjer ('290) includes an outer skin layer in which the laser beam is focused in order for the inventions of Spanjer ('290) to function as described." Spanjer discloses a surface that is marked, **not a polymer skin layer** in the stack-up configuration as recited in claim 1. In fact, it is respectfully submitted that Spanjer teaches away from an outer layer at column 4 lines 33-35 where he recites "It is highly desirable to be able to use a markable compound that will give durable high contrast markings without the need for a supplementary surface coating".

Accordingly, it is respectfully submitted that the three cited references, United States Patent Nos. 5,952,630 (newly cited) and 5,448,028 (newly cited); and 4,654,290, separately

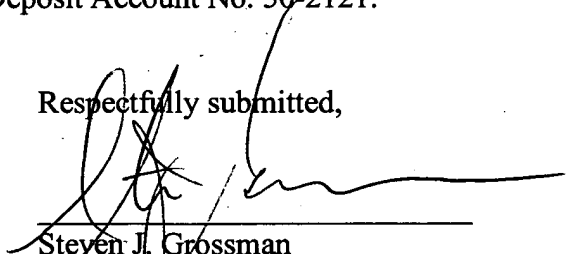
or in combination do not teach or suggest a method of marking a polymeric skin layer of thermoplastic or thermoset material with a laser to indicate the position or function of a switch located beneath the skin layer, the switch embedded in a polyurethane foam layer and the skin formed by casting, spray coating, blow molding or thermoforming, wherein a vehicle interior trim panel comprises a substrate, foam layer, and said skin layer.

In consideration of the remarks hereinabove, Applicants respectfully submit that all claims currently pending in the application are believed to be in condition for allowance. Re-examination and reconsideration is requested. Allowance at an early date is respectfully solicited.

In the event the Examiner deems personal contact is necessary, please contact the undersigned attorney at (603) 668-6560.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 50-2121.

Respectfully submitted,



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